Community Dentistry

Lec12 **د. هدى علي**

Environment and Health

The term of environment includes all the external factors living, non-living material and non-material which surround the human. The purpose of environmental health is to create and maintain ecological conditions that will promote health and thereby prevent disease. The environment influences our health in many ways through exposure to physical, chemical, biological risk factors and through related changes our behavior in response to those factors.

Environment can be divided into three components:

1. **Physical:** Water, air, soil, housing, wastes, radiation, etc.
2. **Biological:** Plant and animal life including bacteria, viruses and insect.
3. **Social:** Customs, culture, habit, income, occupation, religion, etc.

Environmental indicators: Simple measures that tell us what is happening in the environment. They include air, water and noise pollutions and radiation. These indicate the physical and biological environment in which people live and diseases occur.

Pollution of Water: Much of the ill health which affects humanity, especially in developing countries can be traced to lack of safe and wholesome water supply (free from pathogenic agents and harmful chemical substances).

A more serious aspect of water pollution is that caused by human activity urbanization and industrialization. The sources of pollution resulting from these are: sewage, industrial waste, agricultural pollutants, and physical pollutants.

***Water Related Diseases*:** Ingestion of contaminated water either directly or through food may affect man's health by causing water related diseases. Such diseases may be classified as:

A. Biological water-borne diseases:

1. Those caused by the presence of an infective agent: (Viral, Bacterial, Protozoal, Helminthic)

2. Those due to the presence of an aquatic host: (Snail & Cyclops).

B. Chemical water-borne diseases: These include disease caused by industrial and agricultural wastes. Such pollutants include detergents, solvents, heavy metals, minerals and organic acids, nitrogenous substances, bleaching agents, dyes, ammonia, and toxic of organic compounds of great variety. These pollutants affect health, directly and indirectly by accumulating in foods which are consumed by human beings, e.g. fishes.

Purification of water:

1- Storage: Water is drawn from the sources and stored in reservoirs, as a result of storage natural purification will take place. Water should not be stored for more than 14 days.

2-Filtration: About 99% of bacteria, ova and cysts are removed by this process.

3-Chlorination: It is done along with filtration, chlorine kills pathogenic bacteria but it has no effect on viruses and spore, except in high dose.

Air Pollution

The term Air Pollution signifies the presence of substances in the ambient atmosphere which generated by the activities of man in concentrations that interfere with human health, safety or comfort, or injurious to vegetation and animals and

other environmental media resulting in chemicals entering the food chain or drinking water.

Sources of Air Pollution

1. Automobiles.
2. Industries.
3. Domestic sources.
4. Tobacco smoke.
5. Miscellaneous: burning reuse, incinerators, etc.

Effects of air pollutions are as follows:

1- The immediate effects are: allergy, acute bronchitis and other respiratory diseases.

2- The delayed effects are chronic bronchitis and primary lung cancer. heart disease, neurological and behavioral effects.

It does not directly affect the orodental diseases, but indirectly it affects the development of joints and nasopharyngeal complex, thereby, affecting structures.

Prevention of air pollution:

1. Assessment: Is the first step to solve air pollution.

2. Reduce exposure: Steps can be undertaken to reduce air pollution. These can be accomplished by regulation of man-made pollution through legislation. Prevention is another key to control air pollution.

3. Adequate ventilation: Is also a key to control exposure to indoor air pollution. Home and work environments should be monitored for adequate air flow and proper exhaust systems installed.

4. Restricting smoking: Is an important key to a healthier environment.

Noise pollution

Noise defined as unwanted sound or as wrong sound in wrong place at a wrong time Sources: Automobiles, factories, industries, air crafts, loudspeakers, radios, T.V sets etc.

The effect of noise exposure of two types:

1. Auditory effect:

- ***Auditory fatigue:*** It may be associated with side effects such as whistling and buzzing in the ears.
- ***Deafness:*** Temporary or permanent.

2. Non-auditory effect:

- Interference with speech.
- Annoyance: This is primarily a psychological response.
- Efficiency: Reduction in noise has been found to increase work output.
- Physiological changes: A rise in blood pressure, intracranial pressure, heart rate, increase in breathing and sweating.

Control of noise:

1. Planning of cities: Division of city into zones, the separation of residential areas from the main streets

2. Control of vehicles.

3. By improving acoustic insulation of building.

4. Industries and railways should be outside the residential areas.

5. Protection of exposed persons: Workers must be regularly rotated from noisy areas to comparatively quiet posts in factories.

6. Legislation: Workers have the right to claim compensation if they suffered a loss of ability to understand speech.

7. Education about noise pollution should be given.

Radiation

Radiation is energy, or emission of energy, in the form of waves or particles.

Sources of Radiation Exposure

1. **Natural Sources:** Natural sources are those of natural origin. Examples include the sun (UV and cosmic x-rays) and the soil (radon).
2. **Man-made Sources:** Man-made sources are those specifically produced by man. Examples include medical devices, consumer products, and nuclear power plants.

Biological Effects of Radiation

1. Somatic effects

• **Immediate effects** are acute radiation syndrome, central nervous system syndrome

• **Delayed effects** are leukemia, malignant tumors, shortening of life, and abnormality of fetal development.

2. Effect of radiation on oral tissues

- Mucositis: secondary infection by Candida albicans.
- Test buds damage.
- Salivary gland disorder, like xerostomia.
- Tooth growth retardation.
- Rampant caries may occur.

3. Genetic effects: Chromosome mutations (affect sterility) and Point mutations (affect genes).

Radiation protection

1. Use of lead shields and lead aprons.

2. Periodic medical examinations, regular working hours, recreation and holidays must be ensured to workers to maintain their state of health.

3. Unnecessary x – ray exposures should be avoided especially in children and pregnant women

4. Film badges should be used by all the workers.

5. Safe distance from x-ray machine and using lead- lined collimators.